

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau(43) International Publication Date  
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number  
WO 2004/057383 A1(51) International Patent Classification<sup>7</sup>: G02B 6/00(21) International Application Number:  
PCT/IB2003/005724

(22) International Filing Date: 1 December 2003 (01.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2002-370805 20 December 2002 (20.12.2002) JP(71) Applicant (for all designated States except US): KONIN-  
KLJKE PHILIPS ELECTRONICS N.V. [NL/NL];  
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

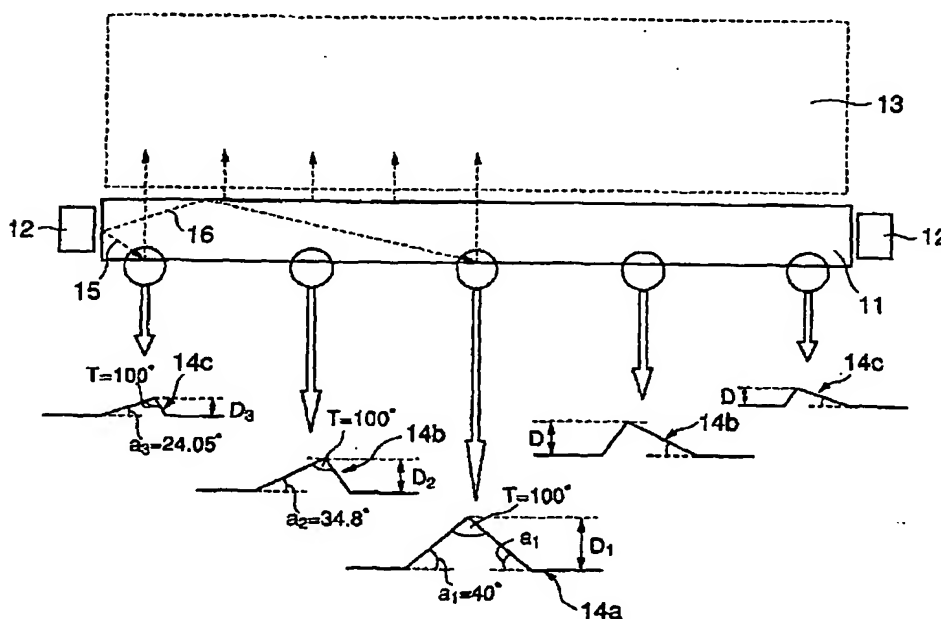
(75) Inventor/Applicant (for US only): TSUDA, Akimitsu  
[JP/JP]; c/o Philips Japan, Ltd., Philips Bldg., 2-13-37,  
Kohnan, Minato-ku, Tokyo 108-8507 (JP).(74) Agent: AOKI, Hiroyoshi; c/o Philips Japan, Ltd., Philips  
Bldg., 2-13-37, Kohnan, Minato-ku, Tokyo 108-8507 (JP).(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,  
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,  
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,  
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.(84) Designated States (regional): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: ASSISTANT LIGHT SOURCE AND FRONT-LIGHT



(57) Abstract: To provide an assistant light source and a front-light emitting light to the light guide plate efficiently. A sectional shape of prism 14a in the center of light stick is isosceles triangle having a tip angle ( $T^\circ$ ) of  $100^\circ$  and a tilt angle ( $a_1$ ) of  $40^\circ$ . The depth of the prism 14a is  $D_1\mu\text{m}$ . A sectional shape of prism 14b in a 1/4 position from an end of light stick is triangle having a tip angle ( $T^\circ$ ) of  $100^\circ$  and a tilt angle ( $a_2$ ) of  $34.8^\circ$ . The depth of the prism 14b is  $D_2\mu\text{m}$ . A sectional shape of prism 14c in an end of light stick is triangle having a tip angle ( $T^\circ$ ) of  $100^\circ$  and a tilt angle ( $a_3$ ) of  $24.05^\circ$ . The depth of the prism 14c is  $D_3\mu\text{m}$ .

# INTERNATIONAL SEARCH REPORT

Int onal Application No  
PCT/IB 03/05724

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G02B6/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
EPO-Internal, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 32390 A (IN FOCUS SYSTEMS INC) 30 November 1995 (1995-11-30) figure 1 page 4, line 16 -page 8, line 12	1-9
A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 03, 31 March 1997 (1997-03-31) -& JP 08 304629 A (TOSHIBA CORP;KONICA CORP), 22 November 1996 (1996-11-22) abstract; figure 13	1
X	US 6 068 382 A (FUKUI ATSUSHI ET AL) 30 May 2000 (2000-05-30) column 15, line 13 - line 30 figure 1 column 5, line 60 -column 10, line 11 figures 1,3	1-9

-/-

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

22 March 2004

Date of mailing of the international search report

29/03/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Luck, W

**Internal Application No**

**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05724

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9532390	A	30-11-1995	AU WO 2592895 A 9532390 A1	18-12-1995 30-11-1995
JP 08304629	A	22-11-1996	NONE	
US 6068382	A	30-05-2000	CN 1177120 A JP 10039302 A US 5980054 A	25-03-1998 13-02-1998 09-11-1999
JP 2001124930	A	11-05-2001	NONE	
EP 1126213	A	22-08-2001	JP 2001229725 A EP 1126213 A1 US 2001013976 A1	24-08-2001 22-08-2001 16-08-2001